What Is Claimed Is:

1. A method of forming a titanium nitride thin film on a substrate disposed on a susceptor in a reaction chamber, comprising:

feeding vapor of a Tetrakis Diethylamino Titanium (TDEAT) precursor and ammonia (NH_3) gas into the reaction chamber, wherein a ratio of a vaporization rate of the TDEAT precursor to a flow rate of the ammonia gas is a value in the range of 1 mg/min : 20 sccm to 1mg/min : 100 sccm;

maintaining an atmosphere in the reaction chamber at a pressure in the range of 0.5 to 3.0 Torr; and

heating the substrate to a temperature in the range of 300 to 400 degrees Celsius (°C).

2. The method of Claim 1, wherein the substrate is heated up to a temperature in the range of 320 to 380 degrees Celsius (°C).

3. The method of Claim 1, wherein the atmosphere in the reaction chamber has a pressure in the range of 0.5 to 1.5 Torr.

4. The method of Claim 1, further comprising supplying a carrier gas into the reaction chamber.

5. The method of Claim 4, wherein the carrier gag is an inert gas selected from a group consisting of argon (Ar) and helium (He).

6. The method of Claim 4, wherein the carrier gas is supplied at a flow rate in the range of

100 to 1000 sccm.

7. The method of Claim 1, further comprising vaporizing the TDEAT precursor before the TDEAT precursor is fed into the reaction chamber.

8. The method of Claim 7, wherein the TDEAT precursor is vaporized at a vaporization rate in a range of 10 to 50 mg/min.

9. The method of Claim 1, wherein the ammonia gas is fed to the reaction chamber at a flow rate in the range of 500 to 3000 sccm.

10. The method of claim 1, wherein the reaction chamber has a dome-shaped top portion and includes a plurality of gas injectors.

11. The method of Claim 10, wherein the plurality of gas injectors supply the TDEAT vapor and the ammonia gas to the reaction chamber.

12. The method of Claim 11, wherein the TDEAT vapor and the ammonia gas are supplied in an upward direction from the bottom to top portion of the reaction chamber.

13. The method of Claim 11, wherein the TDEAT vapor and the ammonia gas are respectively supplied by the different gas injectors.

14. The method of Claim 1, wherein the reaction chamber includes a heat exchanger on an

outer surface thereof.

15. The method of Claim 14, wherein the heat exchanger maintains a top portion of the reaction chamber at a temperature in the range of 50 to 150 degrees Celsius (°C).

16. The method of Claim 15, wherein the heat exchanger maintains a top portion of the reaction chamber at a temperature in the range of 80 to 100 degrees Celsius (°C).

17. The method of Claim 14, wherein the heat exchanger maintains a wall of the reaction chamber at a temperature in the range of 50 to 150 degrees Celsius (°C).

18. The method of Claim 17, wherein the heat exchanger maintains a wall of the reaction chamber at a temperature in the range of 80 to 100 degrees Celsius (°C).